

- 12 -

Claims:

1. A thick film electroluminescent light emitting device having a plurality of layers including:
 - a first electrode layer;
 - 5 a light emitting layer having phosphor particles causing protrusions in the light emitting layer;
 - at least one other layer including a second electrode layer;
 - wherein the first electrode layer and the at least one other layer conform to the protrusions in the light emitting layer.
- 10 2. The thick film electroluminescent light emitting device of claim 1 wherein the at least one other layer includes an insulating layer and the second electrode layer.
3. The thick film electroluminescent light emitting device of claim 2 wherein the insulating layer contains a dielectric material.
4. The thick film electroluminescent light emitting device of any preceding claim wherein
15 the first and/or second electrode layer transmits light.
5. The thick film electroluminescent light emitting device of any one of claims 1 to 4 wherein two or less layers of phosphor particles are arranged in the binder matrix.
6. The thick film electroluminescent light emitting device of claims 2 or 5 wherein the phosphor particles are arranged in an essentially close packed arrangement.
- 20 7. A method of constructing a thick film electroluminescent device including the steps of:
 - placing an insulating layer on an electrode layer;
 - placing a light emitting layer having phosphor particles and a binder matrix onto the insulating layer;
 - placing a transparent electrode layer onto the light emitting layer;
 - 25 causing the phosphor particles from the light emitting layer to protrude into the insulating layer and the transparent electrode.

- 13 -

8. The method of claim 7 wherein a mechanism for the phosphor particles are caused to protrude from the light emitting layer into the insulating layer by chemical softening of the insulating layer.
9. The method of one of claims 7 or 8 wherein the phosphor particles are caused to
5 protrude from the light emitting layer into the insulating layer by heating the binder in the insulating layer above its softening point.
10. The method of any one of claims 7 to 9 wherein the insulating layer contains a dielectric material.
11. The method of any one of claims 7 to 10 wherein the dielectric material is Barium
10 Titanate.
12. The method of any one of claims 7 to 11 wherein the solvent used in the light emitting layer is a solvent for the insulating layer.
13. The method of any one of claims 7 to 12 wherein the amount of binder to phosphor particles is from approximately 25% binder:75% phosphor particle by dry weight, to
15 approximately 5% binder to 95% phosphor by dry weight.
14. A method of constructing a thick film electroluminescent device comprising the steps:
applying a first insulating layer to an electrode layer;
providing a light emitting layer including phosphor particles in a binder matrix, the proportion of phosphor particles in the binder matrix being sufficient such that when
20 solidified, a proportion of the phosphor particles cause protrusions in the light emitting layer;
applying the light emitting layer to the insulating layer; and
applying a second electrode layer;
wherein the insulating layer is heated above its softening temperature to cause the
25 phosphor particles to move into the insulating layer.
15. The method of claim 14 wherein the light emitting layer has a binder to phosphor ratio such that when dried, the phosphor particles protrude from the light emitting layer.

- 14 -

16. The method of claim 14 or 15 wherein the amount of binder to phosphor particles is from approximately 25% binder:75% phosphor particle by dry weight, to approximately 5% binder to 95% phosphor by dry weight.
17. A method of constructing a thick film electroluminescent device comprising the steps:
- 5 applying a first insulating layer to an electrode layer;
- providing a light emitting layer including phosphor particles in a binder matrix, the proportion of phosphor particles in the binder matrix being sufficient such that when solidified, a proportion of the phosphor particles cause protrusions in the light emitting layer;
- 10 applying the light emitting layer to the insulating layer; and
- heating the insulating layer above its softening temperature to cause the phosphor particles to move into the insulating layer;
- then applying a second electrode layer.